

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Original) A catheter for hemodialysis which comprises a flexible catheter tube defining a plurality of separate lumens, said catheter defining an arc angle of generally U-shape in its natural, unstressed configuration, whereby said catheter may be implanted with a distal catheter portion residing in a vein of a patient, said distal catheter portion being of substantially the shape of said vein in its natural, unstressed condition, and a proximal catheter portion residing in a surgically created tunnel extending from said vein and through the skin of the patient, whereby blood may be removed from said vein through one lumen of the catheter and blood may be returned to said vein through another lumen of the catheter.

Claims 2-18. (Canceled)

19. (Previously Presented) A flexible catheter for prolonged vascular access, the catheter comprising: an elongate flexible and tubular body having a proximal portion, a distal portion and a permanently curved portion linking the proximal and distal portions so that the curved, the proximal and the distal portions lie naturally in essentially the same plane with the angle contained between the proximal and distal portions being less than 90°, and a septum extending continuously through said portions and lying substantially at right angles to said plane to divide the tubular body into generally D-shaped intake and outlet lumens; intake and outlet tubes coupled to the

proximal portion at a proximal end of the body remote from the curved portion to receive incoming fluid from the intake lumen and to supply outgoing fluid to the outlet lumen; and a tip formed on the distal end of the distal portion and including at least one intake opening for receiving the incoming fluid and at least one outlet opening for returning the outgoing fluid.

20. (Previously Presented) The flexible catheter of claim 19 in which said portions are round in cross-section.

21. (Previously Presented) The flexible catheter of claim 20 in which the diameter of the proximal portion is greater than the diameter of the distal portion.

22. (Previously Presented) The flexible catheter of claim 21 further comprising a cuff of fibrous material surrounding the body where the proximal portion meets the curved portion.

23. (Previously Presented) The flexible catheter of claim 20 further comprising a cuff of fibrous material surrounding the body where the proximal portion meets the curved portion.

24. (Previously Presented) The flexible catheter of claim 19 further comprising a cuff of fibrous material surrounding the body where the proximal portion meets the curved portion.

25. (Previously Presented) The flexible catheter of claim 19 in which the tip includes an extension blending smoothly into the body and forming an extension to the outlet lumen.

26. (Previously Presented) The flexible catheter of claim 25 in which the at least one intake opening is at a side of the distal portion facing the proximal portion, and in which the extension is at a side of the distal portion remote from the proximal portion.

27. (Previously Presented) The flexible catheter of claim 26 in which said portions are round in cross-section.

28. (Previously Presented) The flexible catheter of claim 27 in which the diameter of the proximal portion is greater than the diameter of the distal portion.

29. (Previously Presented) The flexible catheter of claim 28 in which said angle is in the range of 0°-20°.

30. (Previously Presented) The flexible catheter of claim 26 further comprising a cuff of fibrous material surrounding the body where the proximal portion meets the curved portion.

31. (Previously Presented) The flexible catheter of claim 19 in which the at least one intake opening is at a side of the distal portion facing the proximal portion, and in which the outlet opening is at a side of the distal portion remote from the proximal portion.

32. (Previously Presented) The flexible catheter of claim 31 in which said portions are round in cross-section.

33. (Previously Presented) The flexible catheter of claim 32 in which the diameter of the proximal portion is greater than the diameter of the distal portion.

34. (Previously Presented) The flexible catheter of claim 33 in which said angle is in the range of 0°-20°.

35. (Previously Presented) The flexible catheter of claim 31 further comprising a cuff of fibrous material surrounding the body where the proximal portion meets the curved portion.

36. (Previously Presented) The flexible catheter of claim 19 in which the distal portion is sufficiently flexible to be deformed readily to follow the shape of a vein after entry, and in which the proximal portion is more rigid than the distal portion.

37. (Previously Presented) The flexible catheter of claim 19 in which said angle is in the range of 0° to 20°.

38. (Previously Presented) A flexible catheter for prolonged vascular access, the catheter comprising: an elongate flexible and tubular body having a proximal portion, a distal portion and a permanently curved portion linking the proximal and distal portions so that the curved, the proximal and the distal portions lie naturally in essentially the same plane with the angle contained between the proximal and distal portions being less than 90°; intake and outlet tubes coupled to the proximal portion at a proximal end of the body remote from the curved portion to receive incoming fluid from the intake lumen and to supply outgoing fluid to the outlet lumen; and a tip formed on the distal end of the distal portion and including at least one intake opening for receiving the incoming fluid and at least one outlet opening for returning the outgoing fluid.

39. (New) The catheter of claim 1 in which said catheter portions are round in cross-section.

40. (New) The catheter of claim 39 in which the diameter of the proximal catheter portion is greater than the diameter of the distal catheter portion.

41. (New) The catheter of claim 40 further comprising a cuff of fibrous material surrounding the catheter tube.

42. (New) The catheter of claim 39 further comprising a cuff of fibrous material surrounding the catheter tube.

43. (New) The catheter of claim 1 further comprising a cuff of fibrous material surrounding the catheter tube.

44. (New) The catheter of claim 1 further comprising a tip, which includes an extension blending smoothly into the catheter tube and forming an extension to the outlet lumen.

45. (New) The catheter of claim 44 in which at least one intake opening is at a side of the distal catheter portion facing the proximal catheter portion, and in which the extension is at a side of the distal catheter portion remote from the proximal catheter portion.

46. (New) The catheter of claim 45 in which said catheter portions are round in cross-section.

47. (New) The catheter of claim 46 in which the diameter of the proximal catheter portion is greater than the diameter of the distal catheter portion.

48. (New) The catheter of claim 47 in which said arc angle is in the range of 160°-180°.

49. (New) The catheter of claim 45 further comprising a cuff of fibrous material surrounding the catheter tube.

50. (New) The catheter of claim 1 in which at least one intake opening is at a side of the distal catheter portion facing the proximal catheter portion, and in

which an outlet opening is at a side of the distal catheter portion remote from the proximal catheter portion.

51. (New) The catheter of claim 50 in which said catheter portions are round in cross-section.

52. (New) The catheter of claim 51 in which the diameter of the proximal catheter portion is greater than the diameter of the distal catheter portion.

53. (New) The catheter of claim 52 in which said arc angle is in the range of 160°-180°.

54. (New) The catheter of claim 50 further comprising a cuff of fibrous material surrounding the catheter tube.

55. (New) The catheter of claim 1 in which the distal catheter portion is sufficiently flexible to be deformed readily to follow the shape of a vein after entry, and in which the proximal catheter portion is more rigid than the distal catheter portion.

56. (New) The catheter of claim 1 in which said arc angle is in the range of 160° to 180°.

57. (New) The flexible catheter of claim 38 in which said portions are round in cross-section.

58. (New) The flexible catheter of claim 57 in which the diameter of the proximal portion is greater than the diameter of the distal portion.

59. (New) The flexible catheter of claim 58 further comprising a cuff of fibrous material surrounding the body where the proximal portion meets the curved portion.

60. (New) The flexible catheter of claim 57 further comprising a cuff of fibrous material surrounding the body where the proximal portion meets the curved portion.

61. (New) The flexible catheter of claim 38 further comprising a cuff of fibrous material surrounding the body where the proximal portion meets the curved portion.

62. (New) The flexible catheter of claim 38 in which the tip includes an extension blending smoothly into the body and forming an extension to the outlet lumen.

63. (New) The flexible catheter of claim 62 in which the at least one intake opening is at a side of the distal portion facing the proximal portion, and in which the extension is at a side of the distal portion remote from the proximal portion.

64. (New) The flexible catheter of claim 63 in which said portions are round in cross-section.

65. (New) The flexible catheter of claim 64 in which the diameter of the proximal portion is greater than the diameter of the distal portion.

66. (New) The flexible catheter of claim 65 in which said angle is in the range of 0°-20°.

67. (New) The flexible catheter of claim 63 further comprising a cuff of fibrous material surrounding the body where the proximal portion meets the curved portion.

68. (New) The flexible catheter of claim 38 in which the at least one intake opening is at a side of the distal portion facing the proximal portion, and in which the outlet opening is at a side of the distal portion remote from the proximal portion.

69. (New) The flexible catheter of claim 68 in which said portions are round in cross-section.

70. (New) The flexible catheter of claim 69 in which the diameter of the proximal portion is greater than the diameter of the distal portion.

71. (New) The flexible catheter of claim 70 in which said angle is in the range of 0°-20°.

72. (New) The flexible catheter of claim 68 further comprising a cuff of fibrous material surrounding the body where the proximal portion meets the curved portion.

73. (New) The flexible catheter of claim 38 in which the distal portion is sufficiently flexible to be deformed readily to follow the shape of a vein after entry, and in which the proximal portion is more rigid than the distal portion.

74. (New) The flexible catheter of claim 38 in which said angle is in the range of 0° to 20°.

75. (New) The flexible catheter of claim 19 wherein the angle contained between the proximal and distal portions defines the permanently curved portion linking the proximal and distal portions.

76. (New) The flexible catheter of claim 38 wherein the angle contained between the proximal and distal portions defines the permanently curved portion linking the proximal and distal portions.